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ABSTRACT

Arguments presented against securing computer programs by copyright are centered on the question of whether computer programs qualify under the U.S. Constitutional meaning as "works of authorship," which may be protected by copyright. The possibility that the protection of computer programs by copyright might have an undesirable impact on the national culture is suggested, and the National Commission on New Technological Uses of Copyrighted Works (CONTU) is urged to consider whether any additional protection for programs is in fact needed. If CONTU decides that it is, an alternative form of protection outside copyright is recommended; a tentative draft of a statute for such protection of computer software is attached. (CMV)

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ADDITIONAL VIEWS ON COMPUTER SOFTWARE

by

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ADDITIONAL VIEWS ON COMPUTER SOFTWARE

John Hersey

This "additional view" will argue that computer programs should not be secured by copyright. It will center its argument on the question whether computer programs qualify, under the Constitutional meaning, as "works of authorship" which may be protected by copyright.

It will suggest some ways in which the protection of computer programs by copyright might have an undesirable impact on the national culture.

It will urge the Commission to consider whether any additional protection for programs is in fact needed; and if it decides that it is, to consider the option of a new form of protection, outside copyright. A draft of a model statute, expressing that option, is attached.

The length of this paper is regrettable, but since it is the only CONTU response that opposes the Software Subcommittee Report as a whole, detailed discussion is, alas, obligatory.

ARE PROGRAMS WRITINGS?

The premise of the Software Subcommittee Report (p. 6), upon which all of its conclusions stand or fall -- "that programs are not different from other works now subject to copyright, and, therefore, do not require a separate form of protection" -- is, in this view, false. Programs are profoundly different from the various forms of "works of authorship" secured under the Constitution by copyright.

All computer programs go through various stages of development. Each program may indeed be considered a writing of an author -- up to a certain point in that development; beyond this point, however, the same

program is embodied in material form and becomes a mechanical device, which is engaged in the computer to become an essential part of a mechanical process.

Thus the computer program is something strikingly new in our culture: something which is, at different times, both a writing and a mechanical device.

The stages of development of a program are: a definition, in eye-legible form, of the program's task or function; a description; a listing of the program's steps and/or their expression in flow charts; the translations of these steps into a "source code," often written in a high-level programming language such as FORTRAN or COBOL; the transformation of this source code within the computer, through intervention of a so-called compiler or assembler program (which has itself previously gone through all these stages), into an "object code." This last is most often physically embodied, in the present state of technology, in punched cards, magnetic discs, magnetic tape, or silicon chips.

Every program comes to fruition in this object stage. Every program has but one purpose and use -- one object: to control the electrical impulses of a computer in such a particular way as to carry out a prescribed task or operation. In its object form it does not describe or give directions for mechanical work. It does the work.

An argument commonly made in support of the copyrightability of computer programs is that they are just like ordinary printed (and obviously copyrightable) lists of instructions for mechanical work. The Software Subcommittee calls a program (p. 3) "a writing which sets forth instructions or sets of instructions." But this analogy, or metaphor, does not hold up. Descriptions and printed instructions tell human beings how to use materials or machinery to produce desired results. In the case of computer programs, the instructions themselves become an essential part of the machinery that produces the results.

They may become (in chip or hardwire form) a permanent part of the actual machinery; or they may become interchangeable parts, or tools, insertable and removable from the machine. In whatever material form, the object phase of the program enters into the mechanical process. The former language of the instructions is converted into a device commanding a series of electrical impulses which -- to use a slightly inexact layman's image -- set and operate the switches of the computer in such order as to produce the desired result.

At different times, then, a given program is both "source" and "object," both a writing and a mechanical tool or machine part. Printed instructions tell how to do; programs both tell how and do. The language used to describe and discuss computer programs commonly express this latter, active, functional phase, not the "writing" phase. For example, an earlier draft of CONTU's Data Base Subcommittee, discussing automated data bases, spoke of a "program which does the searching and retrieving" -- note the operative verb, "does." It was not said that the program "describes" or "gives instructions" for functions of search and retrieval. It "does" them. This is the mechanical fact. A true writing has never before done work in this way -- no matter how fervently many an author may have wished his words could "do" something.

Copyrightability of Parts but Not of the Whole; Inseparability of the Parts.

The Software Subcommittee Report (p. 4) posits that with computer programs there are "three different phenomena." (How these phenomena obtain, as the Report says they do, with "all forms of creative endeavor" is a mystery.)

These are said to be:

1) A description of the activity (process);

2) The activity (process) itself;

3) The results of the activity (process).

The report suggests that anything that is a description is entitled to copyright. But what the Report fails to make clear is that with a computer program, item (1) becomes an essential part of item (2). The "activity (process)" cannot take place without the actual mechanical intervention of the objectified "description." The two are not, in real life, separable.

The first stages of a computer program -- definition, description, flow charts, listing of steps, all in human-readable form -- might be considered copyrightable without any change in the present law, providing the program developer chose to publish them, to affix notice, and to deposit copies with the Library of Congress; though it is fairly clear, from testimony we have heard, that program developers would like not to have to do this, for fear of revealing their underlying ideas.

But when it comes to the object, or operative, stage of the program, when it becomes indistinguishable from a machine part and does work -- all resemblance to a "writing" or "description" has been lost. It is a machine tool. In use it has become part of a mechanical process. It is not copyrightable.

If we take the program as a whole, we see that it has both copyrightable and uncopyrightable parts or stages. The latter would preclude the possibility of copyrighting the whole. "In no case," Section 102(b) of the 1976 Act says, "does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of

operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such a work."

The essential fact here (one which needs heavy emphasis) is that computer programs have to be treated as a whole. For purposes of protection, the stages cannot conveniently be separated. Computer developers offer on the market a program package which, besides explanatory materials, contains the program itself, either in the form of printed listings (usually the source program, which in printed form might be copyrightable) or, more often, in the form of punched cards, magnetic tape, discs, chips, or hardware (object program, uncopyrightable), or both at once. In commerce any given program is inextricably both a writing and a mechanical device. Indeed, the only really valuable stage, for use or lease, is the part that is a tool or machine part, the object program, but in order to protect the intellectual effort and inventiveness that went into this property, both stages would need to be protected at once.

The Software Subcommittee (p. 4, fn. 3) recommends leaving to the courts the task of drawing lines between the copyrightable and uncopyrightable forms of a program. For the proprietor, this is a most hazardous suggestion. If the courts decided that copyright could constitutionally subsist in the human-readable stages of a program, but not in the object, or mechanical, phase, then copyright protection for programs as a whole would become largely meaningless, and of no practical use to the industry, since it is the object phase of a program that has commercial value.

A Different Order of Work

The fact that a program is designed to do labor, and does it, makes it a different order of work from all forms of "writing" in which copyright has previously subsisted. There could be no more dramatic way of demonstrating

this than to do what the representatives of the Computer and Business Equipment Manufacturers Association (CBEMA) have urged CONTU, in their testimony, to recommend -- namely, that Section 102 of the Act be amended to add computer programs (and data bases) to the list of "original works of authorship" entitled to copyright:

1) literary works;
2) musical works, including any accompanying words;
3) dramatic works, including any accompanying music;
4) pantomimes and choreographic works;
5) pictorial, graphic, and sculptural works;
6) motion pictures and other audiovisual works;
7) sound recordings;
8) computer programs;
9) data bases.

The startling gap between items (7) and (8) in this list is not simply a cultural matter -- which indeed it most hair-raisingly is. It is also a matter of orders of animals.

The Software Subcommittee Report does not urge adding these categories. It contemplates (p. 16) defining computer programs as "literary works" -- and this (considering the program's object, or mechanical phase) is, in this view, even more hair-raising. More on this below.

It may be argued that the punched cards, discs, tapes, or chips of computer programs are "like" sound recordings, which <u>are</u> secured by copyright. But this analogy is also false. A closer analogy, in functional terms, would be between the embodiments of a computer program (magnetized discs, tapes, chips) and such mechanical devices as the magnetized cards which operate locks or give access to automated bank tellers.

The functions of computer programs are fundamentally and absolutely different in nature from those of sound recordings. The recording produces for the human ear the sounds that were fed into it and so is simply a medium

of transmission of the means of expression of the writing of the author. The program, on the other hand, manipulates the processes of the computer, doing electrical work which has only a functional, mechanical relationship to the writing of the program's author.

And the nature of the machine that plays the sound recording is fundamentally and absolutely different from that of the machine that uses software. The record player has as its sole purpose the performance of the writing of the author in its audible form. The computer may in rare instances serve as a storage and transmission medium for writings (but different writings from those of the computer programmer -- i.e., data bases) in their original and entire text -- in which cases these writings can be adequately secured at both ends of the transaction by the present copyright law; but in the overwhelming majority of cases its purposes are precisely to use programs to transform, to manipulate, to select, to edit, to search and find, to compile, to control and operate computers and a vast array of other machines and systems -- with a result that the original writing of the computer programmer is nowhere to be found in recognizable form, because it has been converted into a mechanical device that does these sorts of work. It is obvious that the means of expression of the original work -- that which copyright is supposed to protect -- is totally lost in the final stage of the computer program.

The above discussion of sound recordings and playing machines could be equally applied to motion picture film in relation to the projector, or to any other original work of authorship, presently copyrightable, which can be "perceived, reproduced, or otherwise communicated . . . with the aid of a machine or device."

The Issue of Communication

The above distinction needs to be examined with great care, because the discs, tapes, and chips of computer programs superficially seem very much like the discs and tapes of sound recordings, motion picture film, or video tape.

We take it as a basic principle that copyright should subsist in any original work of authorship that is fixed in any way (including piano rolls, records, video tapes, etc.) which communicates its means of expression.

But a program, once it enters a computer in its object phase, does not communicate information of its own, intelligible to a human being. It utters work. In its object phase its direct product is not communication but electrical work. It is purely and simply a mechanical substitute for human labor.

In cases where computer programs manipulate data bases, as for instance to select or edit material for a user, the resulting output may give the impression that programs do at least sometimes communicate with human beings. But it must be carefully borne in mind that the output of such processes is not communication of the means of expression of computer programs, but is a product derived from the data base by the electrical work of the program. It is, in other words, merely a result of the program's "activity (process)" -- the third phenomenon of the Subcommittee Report, cited on p. 3 above -- and has no bearing on the copyrightability or non-copyrightability of computer programs in their object phase.

The direct product of a sound recording, when it is put in a record player, is the sound of music -- the writing of the author in its audible form. Of film, it is a combination of picture and sound -- the writing of the author in its visible and audible forms. Of video tape, the same. But the direct product of a computer program is a series of electrical impulses which operate a machine, a computer. The first three communicate with human beings. The computer program in its object phase does not.

The Software Subcommittee Report (p. 4, fn. 3) says, "To the untrained reader the object code does seem to lack communicative potential. That could also be said, however, of such clearly copyrightable works as a book in Sanskrit or a mathematical table of numbers."

The specious implication of these words is that trained readers do read object codes; in general practice they do not. If they did so, it would only be in the sense that a skilled electronic technician might be able to "read" a television circuit. Sanskrit is the classical language of India, meant to be read by literate human beings; mathematical tables may communicate vividly to statisticians, engineers, and others. It is clear that a computer program is not designed to be read by anyone; it is designed to do electronic work that substitutes for the very much greater human labor that would be required to get the desired mechanical result.

The Software Subcommittee Report recommends affording copyright protection to something that starts as a writing but ends as a labor-saving mechanical device.

A Spade by Any Other Name

In the act of wedging the purely mechanical object phase of computer programs into copyright, the Software Subcommittee has been obliged at various stages to resort to certain extraordinary euphemisms. One of them is, in this view, particularly shocking.

We have already touched on it -- the defining of computer programs as "literary works" (p. 16).

The early phases of programs, intelligible to human eyes, must be admitted to this category, which has, over the years, been stretched to include lists, code words, and so on. But it boggles the mind to think of the magnetized discs and tapes, the punched cards, and the silicon chips of programs in their object phase as "literary works."

A silicon chip is a remarkable little package, a half inch or less square which consists of a number of laminated layers of printed electrical circuits, miniaturized versions of such printed circuits as are to be found in television sets, radios, and many other solid-state electronic machines. This mechanical device is here blithely defined as a "literary work."

Bearing in mind the categorical differences, elucidated above, between the tapes, discs, chips, and hardwire forms of computer programs, on the one hand, and the discs and tapes of sound recordings, motion picture film, and video tape, on the other, it is nevertheless necessary in this context, in order to stress the absurdity of this misnomer, to point out that neither the 1909 nor the 1976 copyright law called sound recordings "musical works" or motion picture or television film "dramatic works." (See section 102). Yet these chips, discs, and tapes are "literary works."

This straining of language, and other instances of it, simply point up the difficulty--the polluting and dehumanizing effects--of forcing into copyright something which is, at different times, a writing and a mechanical device.

CULTURAL ISSUES

CONTU has a duty to consider the impact of its recommendations, not only on proprietors and users of information systems, but also on the public. Specifically, considering the long history of copyright's bond to the written word (in both works of literature and practical works), and its bond to musical composition, to painting and sculpture, to the theater, to dance, to film, we must weigh the impact of what we recommend upon the national culture. For copyright has always been a mainstay and guarantee of the creative wellsprings of the culture.

We have often said in Commission discussion that the dual purposes of copyright are the encouragement of creative work and the wide scattering of its fruits. The sanctioning of copyright protection for this new thing, which is both a writing and a mechanical device, would, in this view, tend to dampen the first purpose. Its impact on the creative community would be bound to be discouraging. Furthermore, its indirect impact on consumers of all forms of creative work would, in this view, be unfortunate.

Communication--Human and Mechanical

The aim of all "writing," be it for art or for use, is communication. Up to this time, copyright has always protected the means of expression of various forms of "writing" which were perceived, in every case, by the human sense for which they were intended: written words by the human eye,

music by the ear, paintings by the eye, and so on. Here, for the first time, the protection of copyright would be offered to a "communication" with a machine.

This pollution of copyrighted "writings" with units of mechanical work would affect not only the creators but also the consumers of the culture. Placed beside such traditional end products as books, plays, dance, film, and music, under the aegis of copyright, what end products of computer programs would we find?

The overwhelming majority of program applications are mechanical and commercial: the monitoring of an assembly line in a factory; three parts in every automobile; a micro-computer soon, we are told, in every telephone head-set; the controls of a microwave oven; the aiming devices of a weapons system; the coordination of approach patterns at an airport. An entire branch of the program industry is devoted to systems software--new techniques for more efficient use of machines, for more efficient industrial processing.

Progress is progress, and we can guess that we must have all these products of human ingenuity in order to keep one jump ahead of entropy. But a definite danger to the quality of life comes with a blurring and merging of human and mechanical communication.

This danger is not simply to high culture; quite the contrary. This is not an aesthetic issue; this is not a matter of distinctions between Nobel laureates and computer programmers (Report, p. 26). It is much more basic. It goes to the distinction between human beings and machines.

Various forces--among them, forces arising from new technologies of communication--have for some time been at work in industrialized societies to

blur the primary medium of human communication, the language people use in everyday speech. George Orwell, in his essay "Politics and the English Language,"[1/] showed how far the confusion of meaning of many common words has recently gone, and how dangerous these confusions are. The nation has only just begun to recover from a scarring episode of history, of which it may well be said that the characteristic evil was the misleading use of language in high places. Before he died, the poet W. H. Auden was asked by a reporter for The New York Times what the political duty of a poet is, and his answer expressed with great economy the dangers inherent in such blurrings: "As a poet . . . there is only one political duty, and that is to defend the language from corruption. And that is particularly serious now. It's being so quickly corrupted. When it's corrupted, people lose faith in what they hear, and this leads to violence."

All this is not to suggest that the act of calling a mechanical device a "literary work" (even though this is obviously a corruption of language) contains, in itself, any such grave political or societal dangers. What is intended here is to suggest that official sanction of a correspondence, under law, between communication with human beings and "communication" with machines would tend to reinforce, to some extent, two cultural phenomena that are potentially dangerous--namely, the progressive dehumanization and commercialization of the culture, taken in its broadest and most widely disseminated sense; and a progressive blurring of language that seems to be a concomitant of just such rationalizations as the one we are dealing with here.

1/ From Shooting an Elephant and Other Essays, by George Orwell; New York, Harcourt Brace Jovanovich.

The Individual Creator and the Corporation

While it has always been the case that corporate entities could be copyright proprietors, the picture one gets, where rights in computer programs are concerned, is that the proprietor will almost invariably be corporate. If there is an individual "author," it will be an author for hire, whose creativity is in strict harness and whose property rights are nonexistent.

The sheer bigness of the corporate enterprise in computers is staggering. According to testimony by Peter McCloskey, President of CBEMA, the combined revenues of the 42 members of that association of manufacturers of computers and related business equipment rose last year to 32.7 billion dollars; as to software, we heard at one point an estimate of 17 billion dollars' worth of it in the next three years. The art is growing and changing with dazzling speed. In his testimony Ralph Gommery of IBM suggested, with perhaps a pinch of hyperbole, that if the automobile industry had progressed on the same curve as computers in the last 15 years, we would now have been able to buy for $20 a self-steering car that would attain speeds up to 500 m.p.h. and be able to drive the length of California on one gallon of gasoline. Peter Weiner of RAND gave us the vision of a "computer-based" society a quarter of a century hence, with terminals in every home for all sorts of mechanical and communications aids.

Loading all this expanding technology into the field of copyright would be bound to bring a progressive change in emphasis, and the great new dominant interests would all be corporate. The Constitutional aim of encouraging individual "authors" would have, relatively, less and less weight.

The massive impact of corporate interests on individual creators has already been felt in the book publishing industry. The extraordinary series of corporate acquisitions and mergers in recent years 3/ has been having some disturbing and some disastrous effects on individual authors. A few corporate conglomerates have granted their subsidiary publishing houses autonomy, but some have not. The pressure is on to publish "big" books, and one consequence seems that more books but fewer titles are sold each year. There is a danger that the control by large trade publishers of large paperback houses will place smaller independent trade publishers, and their authors, at a disadvantage in placing paperback rights, particularly those of modest monetary value. One dire example of conglomerate pressure: a publishing house with a large output of textbooks was recently bought by a conglomerate with such diverse interests as ships and frozen foods. Down from the conglomerate came a directive on publishing efficiency, one stricture of which was that no book was to be kept in print, or published even if contracted for, if it has not sold, or would

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3/ For instance:

RCA acquired Random House, which already owned Knopf, Pantheon, Ballantine books, and other firms.

CBS acquired Holt, Rinehart & Winston and W. B. Saunders; Popular Library (mass market paperbacks); Fawcett Publishing (mass market paperbacks, Crest, Gold Medal); and 30 magazines.

Gulf & Western (which had previously taken over Paramount Pictures) acquired Simon & Schuster and Pocket Books.

ITT acquired Howard W. Sams, which in turn owned The Bobbs-Merrill Company.

Doubleday, the largest U.S. trade publisher, acquired Dell, the second-largest mass-market paperback house; Dell also publishes several magazines and, through Delacorte and Dial, hard-cover books. Doubleday owns the Literary Guild and other book clubs and many other media enterprises.

Los Angeles Times acquired New American Library (paperbacks).

Penguin acquired Viking.

Time, Inc., acquired Little, Brown.

Scott Foresman, one of the largest educational houses, owns Morrow and Silver Burdett--the latter also publishes textbooks.

not promise to sell, X number of copies a year. Result: a line of 119 volumes in a paperback series by some of the nation's most distinguished historians, most of which had been having steady sales of two or three thousand copies a year, was cut off dead, with no considerations of the worth of the works beyond their sales figures.

This is bad trouble for our society, and the soul of the trouble is in the type of corporate motive (desirable from the stockholders' viewpoint) that is most aptly symbolized by computer programs that are designed to increase industrial and commercial efficiency. These can distinguish between good and bad sales figures but are never programmed, for practical purposes, to distinguish between a manuscript--or an artifact, or a product--that makes a contribution to the quality of our society and one that does not.

WHAT FORM OF PROTECTION?

Computer programs, as we have seen, introduce an entirely new order of things. How should property rights in this new combination be protected? It is appropriate to secure the means of expression of a writing through copyright. It is appropriate to protect a mechanical device through patent. What is the appropriate way to secure something that is both a writing and a mechanical device?

STATUS QUO?

There is no question that a reasonable degree of protection, to justify the expense and intellectual work of devising programs, is needed. The first issue that needs to be settled is whether any protection in addition to that now available under law is, or will be, needed.

The Commission has been given ample testimony to the ardent and understandable desire of the computer industry for every form of protection it can get. No matter that trade-secrecy laws and copyright are mutually exclusive in intent; a number of interested witnesses have said they want both. But the Commission has not been given any evidence whatsoever that various forms of existing law, other than copyright, have been inadequate to secure computer programs during a period of fantastic development and fierce competition.

The only testimony the Commission has had as to actual abuses and misappropriations of computer properties has come from the Stanford Research Institute. In 470 cases over a 10-year period reviewed by SRI, not one involved issues in the area of copyright. In all cases, there was an existing realm of law under which the crimes could be, and were, dealt with. The actual crimes were malicious mischief, arson, burglary, bombing, murder, breaking and entering, larceny, obtaining money under false pretenses, theft, forgery, embezzlement, violation of trade secrets, altering of records, invasion of privacy.

The arguments of the Subcommittee against further reliance on trade-secrecy laws are theoretical, and some of them are highly dubious. (E.g., transaction costs: It is extremely doubtful that if the industry were given copyright protection for programs, it would discontinue the "expensive security measures" designed to prevent all forms of abuse and misappropriation.) The Subcommittee's arguments are not supported by any evidence the Commission has been given. As we shall see below, it is clear that the industry wants this form of protection and will do everything it can to hold on to it. A CONTU

staff paper, "Reasons for Denying Copyright to Computer Programs," deals with this trade-secrecy issue, among others, at length.

THE NEW-LAW OPTION

In support of its view that computer programs should be protected by copyright, the Software Subcommittee presents extended arguments against two alternative forms of protection, patent and trade-secrecy laws.

But these are not the only non-copyright alternatives. From the very first, in staff memoranda and Commission discussions, another option has been listed: new legislation, defining a new form of protection tailored to this new phenomenon which is both a writing and a mechanical device, with the aims of encouraging new developments in the field and of ensuring their optimum reach.

This section of this paper will attempt to respond to some arguments against even considering the new-legislation approach; will present some second thoughts on claims for copyright for programs, as opposed to new legislation; and will offer one tentative, but apparently viable, model for such legislation.

1. The New-Technology Argument

One argument against the new-law approach offered the Commission by the Software Subcommittee has been the assertion, during an oral exchange, that you cannot write a new law for every new technology that comes along.

The reason for urging a new form of protection, however, has nothing to do with the newness of the technology; it has, rather, to do with entirely new problems of substance, arising from the fundamental nature of certain products and processes of the technology. The reason for urging the new form is

that something altogether new in essence--something that is both a writing (usually suitable for copyright) and a mechanical device (usually suitable for patent)--has emerged. This point is developed further in the above-mentioned staff paper, "Reasons for Denying Copyright to Computer Programs."

2. Mandate Argument

Staff memos have consistently argued that anything but copyright would be outside the mandate of this Commission; the sequitur seems to have been that CONTU therefore cannot consider the new-law approach. But if the Commission should conclude, after study, that copyright is not the right form of protection for computer programs, it would surely have to outline what it thought to be the appropriate alternative. If this were to be new legislation, the Commission would have to set forth the underlying principles of such a law, in order to justify its conclusion.

3. The Register's Memo Argument

"From 1964 until January 1, 1978," the Software Subcommittee report says (p. 7, and fn. 11), "the authority for seeking copyright in a program has been, and will continue to be, the Register's letter of May 19, 1964." Three things about this authority need to be stressed, however.

One is that the Register's decision to accept computer programs as "books" was made despite expressed doubts whether programs were within the category of "writing of an author" in the Constitutional sense. It is the burden of this paper that this doubt should now be confirmed.

Second, the Register's memo was issued during the infancy, or very young age, of the technology. It now should be much clearer what programs are and how they are used.

And third, it is obvious that the industry, faced with a choice between secrecy and dissemination, as represented in the choice between trade-secrecy laws and copyright, has overwhelmingly opted for the former; and such registration and notice-filing as has taken place has been in the nature of bet-hedging. From 1964 to January 1, 1977, only 1205 programs had been registered (and two companies, IBM and Burroughs, accounted for 971 of those). According to International Computer Programs, Inc., which publishes a newsletter on the programming industry, something in the order of 1,000,000 programs are developed each year (taking into account revisions of existing programs so radical as to make them new programs). There are roughly 300,000 programmers in the United States who spend at least part of their time developing new programs. These figures show how miniscule has been the response to the Register's memo. The Subcommittee Report (p. 12) attaches significance to the fact that numerous general-purpose programs have borne copyright notices; it should be fairly obvious that this practice, also, has been a matter of bet-hedging, reflecting the industry's uncertainty about future legislation.

4. The Preemption Argument

The recent CONTU staff memorandum, "Preemption of State and Common Law Protection for Works Subject to Copyright Protection," concludes that in spite of the preemption clause of the new copyright act (and, by the same reasoning, in spite of the added stricture on preemption with respect to computer programs proposed by the Software Subcommittee), "it appears that the availability of trade-secret protection for computer programs will not be disturbed by the . . . new copyright law. Rather, the difference in protection

offered by trade-secret law and copyright, along with the current judicial trend towards recognizing comity between state and federal authority unless absolutely barred by a strict interpretation of federal regulatory legislation, indicates that trade-secret protection for computer programs can coexist with copyright."

5. The Whitford Committee Argument

The Software Subcommittee relies (p. 2, fn. 2) on an agreeing conclusion of the so-called Whitford Committee, in Great Britain. It should be noted that other inquiries have come to quite different conclusions. The World Intellectual Property Organization (WIPO), an agency of the United Nations, is devising a model form of registration for computer programs which combines features of patent and copyright law. A recent Consumer and Corporate Affairs study in Canada, reflecting the opinion of the Canadian Economic Council, concluded (April, 1977) that computer programs could not be protected by copyright "without copyright principles being twisted beyond recognition." There have been many studies on this issue, and different proposals, reflecting widespread uncertainty as to the best course, have been made. Examples of these are cited in a CONTU staff paper, "The Software Issue."

6. Political Expediency Argument

It is argued that efforts to get a national fair-trade law through Congress, with adequate and uniform trade-secrecy provisions, have dismally failed, and that therefore the chances of getting through a new computer-protection law would be slight. But it is clear that CONTU has a duty to find and recommend what is right and proper, not what is expedient. It was precisely because CONTU would be outside politics and beyond lobbying pressures that Congress passed this issue on to the Commission.

7. Legislative Intent Argument

"A reading of the Act of 1976 and consideration of its legislative history," the Report says (p. 7), "indicates that it was Congress' intent that computer programs be within its ambit." Is this intent so clear? It is true that in several places in the legislative reports there are sprinklings of references to computers. But the explicit language of both House and Senate Reports on Section 117, explaining why the computer question was turned over to CONTU, said, "It has become increasingly apparent that in one major area the problems are not sufficiently developed for a definitive legislative solution. This is the area of computer uses of copyrighted works: the use of a work 'in conjunction with automated systems capable of storing, processing, retrieving, or transferring information.'" Are computer programs "copyrighted works"? The only authority for considering them potentially so is the Register's letter of 1964--itself hedged, as we have noted, with doubt. The very fact that Congress threw up its collective hands and turned the computer issue over to CONTU indicates that the intent was cloudy, at the very least. And surely the Commission must take a full view of its assignment, and if it finds that the half-formed intent of Congress was mistaken, it has a duty to say so.

A VIABLE ALTERNATIVE

Attached to this paper is a tentative draft of a statute for the protection of computer software. It is tentative, is not without drawbacks, and is in short not perfect; but it does have certain important values.

1. Neutral Ground

The Software Subcommittee Report (p.6) says, "Many proposals for

new forms of protection are in most respects indistinguishable from copyright." This statute is different from copyright in one essential, and the essential, respect: It is drawn specifically to protect both the expression (appropriate to copyright) and the innovative ideas (appropriate to patent) involved in the creation of computer programs. This is exactly appropriate for something that is both a writing and a mechanical device.

Such a statute, designed to secure something that is sold or leased as both of these, establishes a reserved territory between copyright and patent, which has aspects of both but is neither.

2. Term. The proposed term, ten years, is far more suitable for computer programs than the much longer term of protection of the copyright law. The effect of this term would be to give an innovative developer an edge on competitors, but not for so long as to deny to the public the cumulative worth of the inherent knowledge involved. If the balance between encouragement of innovation and public access were thought to be too favorable to one or the other, the term could be accordingly, and with ease, shortened or lengthened.

3. Flexibility. The statute has the great virtue of simplicity and of flexibility for the future. The instrument being developed by WIPO, mentioned above, seems to have become excessivly complicated and overly technical; this draft suggests that a much "cleaner" law may be possible. Since changes in technologies for operating computers are bound to have more far reaching and wrenching consequences than changes in the technologies of conventional copyrighted works, it would be greatly advantageous to have a new law covering the peculiar matters of substance in the former. Mandatory public reviews -- once a decade, perhaps -- might be built into the statute, rather than, as is proposed by the subcommittee,

jamming this fast-changing monster into the rigid framework of copyright.

4. The Vital Distinction. This statute places the protection of an essentially industrial and commercial article where it belongs, and it avoids the pollution of copyright by mechanical devices.

Why does this matter? Proponents of copyright for computer programs say that it is a matter of semantics whether one calls a form of protection "copyright" or "beanbag." They reason that if the characteristics of protection are somewhat similar to those provided writings under copyright, it would be wiser to bend the copyright law than to devise a separate statutory scheme to provide the desired protection.

But the entitlement of computer programs to copyright would set a radical precedent. For the first time, copyright would protect a device which is capable of "communicating" only with machinery -- thus equating machines with human beings as the intended recipients of the distribution that copyright was designed to foster.

Surely it is especially vital, in a time of a hurtling and insatiable technology, that the Nation's laws reflect, whenever possible, a distinction between the realm and responsibility of human beings and the realm and responsibility attributed to machines. This statute would help to do that.

COMPUTER SOFTWARE PROTECTION ACT

This Act has been prepared at the request of Commissioner John Hersey as an alternative to the proposals contained in the Report of the Software Subcommittee of the National Commission on New Technological Uses of Copyrighted Works.

§ 1. Registry of Computer Software

There is hereby created within the Department of Commerce the Registry of Computer Software, which will receive and register computer software products in which rights are asserted under the provisions of this Act.

§ 2. Definitions

As used in this Act, the following terms are defined as here set forth:

A "Computer" is a machine or device capable of storing, processing, retrieving or transferring information.

"Computer software" is a computer program and all accompanying documentation.

A "Computer program" is a set of machine directions designed to control the operations of a computer in order to obtain a desired result.

"Accompanying documentation" is that material, including flow charts, diagrams, lists of individual operating steps of a program, and written manuals explaining or describing the function, operation and maintenance of a program, which is supplied by a vendor or supplier of computer software along with the program itself.

§ 3. Protected Subject Matter

(a) Protection may be obtained under the provisions of this Act for computer software which is the product of original intellectual effort,

produced in any form or medium, and which includes as one of its component elements a computer program capable of interacting directly with a computer to control its operations in order to obtain a desired result.

(b) In no case does the protection afforded by this Act extend to any element of computer software which is merely the embodiment of a mathematical relationship or scientific principle.

§ 4. Exclusive Rights In Computer Software

The lawful proprietor of computer software under the provisions of this Act has the exclusive right to do and authorize the following:

(1) to reproduce the software in whole or substantial part, including any original method or process embodied in the software, in any medium;

(2) to distribute copies of the software, in whole or substantial part, to the public by sale or lease;

(3) to use the software, in whole or substantial part, to operate a computer.

§ 5. Ownership of Computer Software

(a) The following parties are entitled to ownership of the exclusive rights in computer software granted under the provisions of this Act; subject to the provision of section 4(b) of this Act.

(1) the independent creator, or in the case of products created jointly by two or more individuals, creators, are entitled to ownership of the software;

(2) in the case of software created by an employee within the scope of his or her employment, the employer is entitled to ownership of the software.

(3) in the case of software specially ordered or commissioned, the individual or entity at whose behest the software is created is entitled to ownership of the software;

(b) In determining ownership of exclusive rights in computer software under the provisions of this Act, the United States Government is entitled to protection as an employer or in commissioning work on the same basis as any private person or organization.

(c) The ownership of exclusive rights in computer software under the provisions of this Act, including initial entitlement thereto, may be transferred in whole or in part by contract and may descend according to testamentary disposition or applicable laws of intestate succession.

(d) The ownership of exclusive rights in computer software protected under the provisions of this Act is separate and distinct from the ownership of any material object in which the software is embodied. Transfer of a particular copy or copies of software does not, in the absence of specific agreement, entitle the transferee to exercise the exclusive rights in software granted by section 4 of this Act.

§ 7. Term of Protection

(a) The exclusive rights granted by section 4 of this Act shall endure for a period of ten years, which period shall terminate in all events on the last day of the 10th calendar year in which protection extends, beginning at the earliest of the following occurrences:

(1) the computer software is first used, other than for the purpose of developing and testing, in the operation of an electric data processing machine under authority of the owner;

(2) the computer software is first made available, by sale, lease, or otherwise, to any members of the public under authority of the owner.

§ 8. Preemptive Affect of Protection

(a) All legal or equitable rights that may be asserted in computer software created after (effective date of law) are the exclusive product of this Act, subject only to the following exceptions:

(1) Rights in accompanying documentation may be secured under the Copyright Act, Title 17 of the United States Code; and can coexist with protection under the provisions of this Act.

(2) Trademark protection, either at common law or under the provisions of the Lanham Act, 15 U.S.C.

§§ 1051-1127 et seq., may be secured for computer software, and can coexist with protection under the provisions of this Act.

No other exclusive rights may be asserted in computer software, whether under federal legislation or state statutory and common law, outside the provisions of this Act.

(b) All rights in computer software created prior to (effective date of law) are to be determined according to all federal, state and common law applicable prior to the effective date of this Act.

§9. Notice

Any program or separate component of accompanying documentation constituting a portion of a software product in which protection under the provisions of this Act is sought must contain a visually perceptible notice placed on or attached to the software component in a conspicuous location so as to give reasonable notification of the claim of ownership in the software. All reproductions of software components created under authority of the owner must contain the notice required by this section. Notice must consist of the following elements:

(1) The words "software protection," the abbreviation "Soft.", or the symbol "Ⓢ"; and

(2) The name of the owner of the computer software, or an abbreviated designation by which the owner can be recognized.

(3) The year in which the term of protection initially vests, as defined by section 7 of this Act.

§10. Error in Notice.

(a) The omission of or error in the content or placement of notice required by section 9 of this Act on computer software products distributed under authority of the owner does not invalidate the protection available under the provisions of this Act.

(b) No liability for monetary damages or equitable compensation will be incurred for unintentional violations of an owner's exclusive rights in software which result from an innocent violator being reasonably misled by the absence of proper notice from software in which protection is claimed under the provisions of this Act. In determining the absence of liability, a court shall consider whether a violator had access to sufficient information on the software product in question to identify the actual owner, or be directed to accessible registration records maintained at the Registry of Computer Software which would disclose the identity of any party claiming exclusive rights in the software under the provisions of this Act.

(c) A court may grant injunctive relief under the provisions of section 14(a) of this Act against one innocently misled by the absence of proper notice under the standards of subsection (b) of this section, or in the alternative may, in its discretion and in order to prevent hardship to an innocent violator who has incurred substantial investment in activity in violation of exclusive rights granted by this Act, condition continued violations upon the payment to the actual owner of software of a reasonable royalty.

§11. Registration

(a) The owner of any computer software product shall, as a condition to protection under the provisions of this Act, register the claim by providing the Registry of Computer Software, with the following:

(1) an application form prescribed by the Secretary of Commerce; and

(2) a registration fee prescribed by the Secretary of Commerce; and

(3) one complete copy of the computer software, including the program and accompanying documentation.

(b) The Secretary of Commerce is authorized to prescribe by regulation the required contents of the application form required by subsection (a)(1) of this section and the registration fee required by subsection (a)(2) of this section. The Secretary may also permit, by regulation, the provision of identifying, descriptive material in lieu of the computer program in order to avoid the imposition of practical or financial hardship on the Registry of Computer Software or the registrant.

(c) The Secretary of Commerce shall, upon receipt of a proper claim for registration as governed by subsection (a) of this section, register the claim and issue the registrant a certificate of registration for computer software. That certificate shall constitute prima facie evidence of the facts set forth in the application for protection required by subsection (a)(1) of this section, admissible in any action to enforce rights in such registered software brought under the provisions of this Act.

(d) The failure to include individual components of the accompanying documentation required for registration under subsection (a) of this section will not invalidate the registration. Provision to the Registry of Computer Software of any such components may be compelled by order of the Secretary of Commerce, or by any party challenging the rights claimed by an owner of computer software in a civil action brought under the provisions of this Act.

(e) No action to enforce rights granted under the provisions of this Act may be instituted until registration for the computer software in which rights are being asserted is made in accordance with this section and no rights will be enforced unless registration in accord with this section was completed at the time of the allegedly infringing acts. In any case where a proper application form, fee and copy of the computer software have been provided the Registry of Computer Software, but registration has been denied, the applicant may join the Secretary of Commerce in an action to enforce rights under the provisions of this Act, and proceed to assert the jurisdiction of the federal courts provided by section 13 of this Act for all alleged violations occurring after registration was proferred.

§12 Recordation of Transfers

(a) Transfer of ownership of any of the exclusive rights in computer software granted by section 4 of this Act may be recorded in the Registry of Computer Software. In order to obtain such recordation, the claimant of such rights must provide the Registry of Computer Software with the following:

(2) a recordation form prescribed by the Secretary of Commerce for the purpose of recording transfers of rights in computer software; and

(3) a recordation fee prescribed by the Secretary of Commerce.

(b) The Secretary of Commerce is authorized to prescribe by regulation recordation forms required by subsection (a)(2) of this section and the recordation fee required by subsection (a)(3) of this section.

(c) The Secretary of Commerce, shall, upon receipt of a proper claim for recordation of a transfer of ownership in computer software protected under the provisions of this Act, record the claim and issue the claimant a certificate of recordation. That certificate shall constitute prima facie evidence of the facts set forth in the application for recordation, admissible in any action to enforce rights in registered software brought under the provisions of this Act.

(d) No action to enforce rights asserted by the transferee of the initial registrant of rights in computer software may be instituted until recordation of the transfer is made in accordance with this section.

§13. Jurisdiction over Civil Actions

Jurisdiction over any cause of action to enforce rights granted under the provision of this Act lies exclusively in the federal district courts.

§14. Remedies for Infringement

(a) The owner of any of the exclusive rights granted under the provisions of this Act may obtain injunctive relief to prevent the violation of any of these exclusive rights, subject to the discretionary authority vested in the courts by section 10(c) of this Act. Any injunction awarded to enforce these rights shall be operative throughout the United States and all territories and possessions subject to its laws, and may be enforced by proceedings in contempt. As part of the injunctive relief, a court may seize and dispose of any materials found to violate exclusive rights asserted in software.

(b) The owner of any of the exclusive rights granted under the provisions of this Act is entitled to money damages for the actual damages incurred as a result of infringement of rights protected under this Act, and to any additional profits lost as a result of such infringement.

(c) The successful party in a cause of action brought under the provisions of this Act is entitled to recover the costs of the action, and may also recover, at the discretion of the court, a reasonable attorney's fee.

§15. Limitation of Actions

No cause of action may be maintained under the provisions of this Act unless it is commenced within three years after the claim accrued.

§16. Authorization to Promulgate Rules

The Secretary of Commerce is authorized to establish rules and regulations consistent with the provisions of this Act for the administration of the Registry of Computer Software.